SOCIETIES AND ACADEMIES

LONDON

Royal Horticultural Society, July 15.—Scientific Committee.—A. Smee, F.R.S., in the chair.—Mr. McLachlan showed damson leaves affected with a gall produced by *Volvulifex pruni*, a species commonly found on the sloe.—Dr. Hooker sent a note stating that since the last meeting a Ward's case had been received from Mr. Moseley of the *Challenger*, and though all the plants were dead, the soil, when spread out and watered, yielded numerous seedlings of *Pringlea* and *Azorella*.—Dr. Masters exhibited a branch of Privet, furnished with large woody spines.

General Meeting.—Dr. Masters, F.R.S., in the chair.—The Rev. M. J. Berkeley commented on the most important of the objects submitted to the Fruit and Floral Committees.

PHILADELPHIA

Academy of Natural Sciences, Dec. 30, 1873.—Dr. Ruschenberger, president, in the chair.—The following paper was presented for publication:—Remarkable variations in coloration, ornamentation, &c., of certain larvæ of Nocturnal Lepidoptera, by Thos. G. Gentry.—On report of the committees, the following papers were ordered to be printed: Description of seven new species of *Unionidæ* of the United States, by Isaac Lea; Description of three new species of *Uniones* of the United States, by Isaac Lea.

Jan. 6.—Dr. Ruschenberger, president, in the chair.—Dr. J. G. Hunt remarked that the structure of the *Schizæa pusilla* differed widely from that of our other indigenous schizaceous ferns, viz., *Lygodium palmatum*, and its morphological elements are unlike those of our ferns in general. The barren frond of *Schizæa pusilla* is marked on its epidermal surface with a *double line* of stomata, and these organs extend the entire length of the frond. The cells which make up the interior of this delicate fern are cylindrical and vary in size, but their distinctive characters lie in minute projections or outgrowths from all sides of the cells, and these projections meet and are articulated with corresponding outgrowth from adjoining cells, so that the cells of *Schizæa* have penetrating between them in every direction intercellular spaces and channels of *remarkable regularity* and beauty, and so characteristic is this plan of cell-union that the botanist need find no difficulty in identifying the smallest fragment of the plant. This morphological peculiarity has not been noticed before.—Mr. Thomas Meehan exhibited some flowers of *Passiflora quadrangularis*, in which some of them had the pistils almost wanting, while the flowers were perfect in all other particulars. He said it was well known that in cultivation this plant never produced fruit unless by artificial cross-impregnation, but he thought the tendency to abort in the female flowers, and thus approach the classes which were in structure as well as practically uni-sexual, had not been noticed before. There was a species in New Zealand, however, known to be monœcious, and it might be just possible that the *Passifloraceæ*, with mostly hermaphrodite flowers, were following in the wake of the allied *Cucurbitaceæ*, in which a complete separation of the sexes was the rule.

Jan. 13.—Dr. Ruschenberger, president, in the chair.—Prof. Leidy remarked that two species of *Hydra* were common in the neighbourhood of Philadelphia. One is of a light brownish hue and is found on the under side of stones and on aquatic plants in the Delaware and Schuylkill rivers, and in ditches communicating with the same. Preserved in an aquarium, after some days the animals will often elongate the tentacula for several inches in length. The green *Hydra* is found in ponds and springs attached to aquatic plants. It has from six to eight tentacles, which never elongate to the extent they do in the brown *Hydra*. In winter the animal is frequently observed with the male organs developed just below the head as a mamma-like process on each side of the body. He had not been able to satisfy himself that these *Hydræ* were different from *H. fusca* and *H. viridis* of Europe. Prof. Agassiz had indicated similar coloured forms in Massachusetts and Connecticut, under the names of *H. carnea* and *H. gracilis*. Of the former he remarks that it has very short tentacles, and, if this is correct under all circumstances, it must be different from our brown *Hydra*, which can elongate its arms for 3 in. or more.

Jan. 20.—Dr. Ruschenberger, president, in the chair.—Prof. E. D. Cope described some species of extinct tortoises from certain formations of north-eastern Colorado, which had been previously found in the Fort Union or lignite beds of the Missouri river region by Dr. Hayden. He had in 1868 recognised the age of the latter as Cretaceous, contrary to the opinion expressed by some geologists, that the formation both in Dakota and Colorado is Tertiary.—Mr. Cope incidentally mentioned the recent discovery of remains of *Dinosaurs* in the lignite beds of Colorado, which were thus proved to belong to the Cretaceous period, and not Tertiary, as the evidence of the fossil plants had been interpreted by Mr. Lesquereux and others. Dr. LeConte expressed his great satisfaction at the complete confirmation, by his friend Mr. Cope, of the statements he made several years ago (Notes on the Geology of the Survey for the Extension of the Union Pacific Railway, Eastern Division: Philadelphia, Feb. 1867), concerning the Cretaceous age of the lignites at the eastern base of the Rocky Mountains, from near Denver southwards into New Mexico.

Jan. 27.—Dr. Ruschenberger, president, in the chair.—Prof. Cope made some observations on the age of the lignite and other corresponding formations of the West, and especially its supposed equivalent in Northern Colorado. He referred to his determination of the Upper Missouri formation as Cretaceous in 1868; of the Wyoming Bitter Creek series as of the same age in 1872. He now added the Colorado strata to the same, on the evidence of vertebrate remains procured by himself during the past season, in connection with the United States Geological Survey under Dr. F. V. Hayden. These remains consisted of *Dinosauria* of three species, tortoises of five, and a single species of crocodile. Five of the genera were diagnostic. The *Dinosauria* were referred to the old genus *Hadrosaurus* and the new genera *Polyonax* and *Cionodon*. The *Cionodon arctatus* was a large herbivorous saurian, allied to *Hadrosaurus*, but with a most complex and singular type of dentition; the size that of a horse. The other two species are much larger.

BOSTON, U.S.

Society of Natural History, Feb. 18.—Dr. H. Hagen read a paper On amber in North America, calling attention to a forgotten paper by Dr. G. Troost, published in Silliman's *American Journal of Science*, 1821, entitled, "Description of a variety of Amber, and of a fossil substance supposed to be the nest of an insect, discovered at Cape Sable, Md." This paper contains much more than its title would indicate, giving an elaborate account of the geological formation of Cape Sable Dr. Hagen then described the different strata at Cape Sable, as given by Dr. Troost; comparing which with the profile of the coast of Samland in Eastern Prussia, where most of the amber was found, he showed there was little resemblance between the two, except the occurrence of amber in sandy strata and the agglutination of sand by iron oxide, although whether this sand has any similarity to the glauconite of the amber strata in Prussia he did not know. A striking difference between the amber strata in Eastern Prussia and in Maryland is the occurrence of lignite only below these strata in the latter and only above in the former locality. This fact perhaps indicates some similarity with the occurrence of amber in the so-called *striped sand* of the lignite layers of Prussia.—Dr. Hunt then read a paper on the deposition of clays. Having examined the water of the Mississippi near its mouth, he found it to contain about 1-2000 of suspended matter, chiefly clay, which required from ten to fourteen days to subside. He, however, observed that the addition of sea-water or of salt, sulphate of magnesia, alum, or sulphuric acid, rendered the turbid water clear in from twelve to eighteen hours. He thus explained the ready precipitation of the suspended clay when the river water comes in contact with the salt waters of the Gulf of Mexico, causing thus great deposits of fine mud and helping us to understand the origin of the accumulations of argillites and clay slates which are met with in various geological formations. An explanation of this phenomenon is to be found, Dr. Hunt thinks, in the researches of Guthrie on the formation of drops (Proc. Royal Soc., xiv., 1864). Studying the size of drops of water falling from a small sphere of ivory, he found that the cohesion of the water was diminished when it held saline matter in solution, as was shown by the smaller size of the drops. This was verified by experiments with solutions of various strengths, of nitre and chloride of calcium. It was found that the addition of eight parts of the latter salt to 1,000 parts of water reduced by one-ninth the size of the drops, which was determined by their diminished weight. These results show a diminished cohesion of the liquid to the ivory sphere, from which it was by the force of gravity made to fall. The cohesion in virtue of which extremely attenuated particles of clay are held

in suspension in water in opposition to gravity, is in this manner so far reduced by the addition of saline matters that gravity and cohesion rapidly assert themselves among the suspended particles, which collect together and subside, leaving the saline liquid clear. The precipitation of suspended clay is made very rapid when a strong solution of salt is employed.

VIENNA

Imperial Academy of Sciences, March 12.—M. Puschl communicated a paper on heat of bodies and ether-density. To explain Dulong and Petit's law, he assumes that, in solid bodies, the *vis-viva* of atom-motion is small compared with the quantity of rays collected in the ether between the atoms, through reflection; that, at ordinary temperatures, bodies are nearly quite opaque for their own internal radiation; and that the chemical equivalent weights of bodies are no relative atomic weights, but weight quantities with equal amounts of atom surface. He thinks that possibly all chemical changes in bodies may be accounted for by heat radiation. The heat of bodies consisting mainly in motion of ether, a means is given of determining the lower limit of density of the latter; and M. Puschl considers it must be more than 26 billionths of that of water (regard being had to the specific heat of water).—A note from Prof. Maley stated that he had been able to make the urine of dogs alkaline through simple removal of the acid gastric juice from the body.—M. Oppolzer, from experiments on the velocity of propagation of the electric current, estimated it at 4,000 geographical miles in a second.—Prof. Böhm read a paper On formation of starch in the germinating leaves of cress, radish, and flax. He opposes Kundt's view that starch developed among the chlorophyll granules, on exposure to light, is an assimilation-product formed immediately from decomposed carbonic acid. He considers it rather a transformation-product of reserve nutriment already present in the cotyledons (adducing evidence of this from various experiments).—Dr. Streintz communicated a paper On deadening of torsion-oscillations of wires. Internal metal-deadening (as he calls that part of the deadening which has its cause in torsion of the wire), does not, he finds, follow the laws of air-deadening. One property they have in common; the logarithmic decrement for different amplitudes is the same. But the metal deadening remains unaltered when the moment of inertia is changed, or the wire lengthened or shortened, and so the time of vibration altered. It is independent of the diameter and tension of the wire; it grows quickly with the temperature. Annealed wires show a much less deadening than unannealed. These properties explain some peculiarities of musical instruments, and may be variously utilised.—M. Schrauf presented a note on the thermo-electric properties of various minerals.

March 19.—Prof. Mach communicated a third paper On the sense of equilibrium, giving a formula which applies to pressure of parts of the body on each other, muscular efforts, skin sensations, hydrostatic blood pressure, and the hypothetical functions of the labyrinth.—Dr. Boué gave an extract from his treatise on the constituent parts of mountain chains, on mountain systems, and comparison of the surfaces of the earth and moon. He criticises M. Elie de Beaumont's theory, regarding it as merely a fragment of a more general orogeny.

GÖTTINGEN

Royal Society of Sciences, Feb. 7.—M. Grisebach read a paper On a collection of plants made by Prof. Lorenz in the provinces of Cordova, Santiago del Estero, Tucuman, and Catamarca, in South America (between 26° and 31° S. lat.). The diligent labour of two years, and in widely different localities, furnished only 900 species, showing how little varied, comparatively, are the Argentine flora. Neither climate nor soil seems to account for this homogeneity. The author considers it explained by the fact of this part of South America having been raised out of the bed of the Atlantic later than the neighbouring regions of Brazil and Chili, long geological periods being necessary for the appearance of new organisms. As to the question whether there has been only immigration of species, or new species have arisen independently, it appears from comparison of Brazilian and Chilian flora that the latter is true; the number of endemic species is about 43 per cent., a proportion similar to that in flora regarded as independent. Among the immigrant species the relationship to Chili is most marked.—M. Kohlrausch communicated a paper On thermo-electricity, conduction of heat, and electricity. He sets out with the hypothesis that with a heat-current of certain amount dependent on the nature of the conductor, an electric current is connected; and explains by means of it the phenomena of thermo-electricity. To explain Peltier's observation of development of heat by an electric current at a point of junction, it is added, that heat is moved by an electric current; and the heat-moving force of the unit electric current in any body is proportional to the electromotive force of the unit heat-current in the same body. This suggestive paper also treats of the relations of the hypothesis to the principle of conservation of energy, displacement of the thermo-electric order of metals by temperature, heat conduction and work, &c.—M. Heymannrpresented a paper On an Indian drama, Bharata's Natyaçastram.—M. Enneper discussed some theorems relating to surfaces of the second order.

PARIS

Academy of Sciences, July 27.—M. Bertrand in the chair—The following papers were read:—Action of differently refrangible rays on iodide and bromide of silver; influence of colouring matters, by M. Edm. Becquerel.—On the Algerian meteorological tracing, by M. Ch. Sainte-Claire Deville.—Objections to the method of uprooting vines for the destruction of *Phylloxera*; indication of another process; a letter from M. C. Naudin to M. Elie de Beaumont.—Report on M. Cauvy's memoir concerning the means of preserving vines from the invasion of *Phylloxera*, by the Commissioners.—Researches on explosive bodies: explosion of powder, by MM. Noble and F. A. Abel, first memoir.—Note on the quantity of water consumed by wheat during its growth, by M. Marié-Davy.—Actual state of the invasion of *Phylloxera* in the Charente provinces, extract from a letter from M. M. Girard to M. Dumas.—Indications given in 1845 of the existence of an ancient sea in Algeria, in the meridional portion of the Atlas, and on the possibility of re-establishing this sea, by M. Virlet d'Aoust, in a letter to the perpetual secretary.—On the production in the same medium and at the same temperature of the two varieties of sulphur, octahedral and prismatic, by M. D. Gernez.—On the action of ether on cupric oxide for transforming it into cuprous oxide and into metallic copper, by M. A. Guerout.—On isoterebenthene, by M. J. Riban.—On a division of the fibrin of blood from whence is derived a substance analogous to ordinary albumen, by M. A. Gautier.—On the anti-putrid property of the heavy oil of coal-tar, by M. L. Dusart.—New process for the manufacture of the so-called "*alummed*" stuccoes or plasters, by M. Ed. Landrin.—On decomposition of albuminoid matters *in vacuo*, by MM. N. Gréhaut and E. Modrzejewski.—Storm of May 26, at Vendôme (Loire et Cher); thunderbolt; scheme for a simplified lightning conductor, by M. E. Nouel.—On the metamorphoses of *Sacculina Carcini*, by M. A. Giard.—Note on the development of the spermatozoids of the brachyurous decapods, by M. P. Hallez.—On the origin of the hot winds of the Alps and the physical constitution of the Sahara, by M. Ch. Grad.—On a vitreous feldspathic orthose from the Isle of Rachgoun (Algeria, province of Oran), by M. Ch. Vélain.—Note on the geology and palæontology of the estuarine formations of the upper tertiary at the environs of Oran, by M. Bleicher.—On the phosphates of lime from Ciply, in Belgium, by M. Nivoit.

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